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Docket No.: 22122878-4412

**IN THE UNITED PATENT AND TRADEMARK OFFICE**

Applicants: Anthony C. Zuppero et al.  
Application No.: 09/631,463  
U.S. Filing Date: August 3, 2000  
Title: SOLID STATE SURFACE CATALYSIS REACTOR  
Group Art Unit: 1725  
Examiner: Kiley Stoner

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Assistant Commissioner for Patents  
Washington, D.C. 20231

**INFORMATION DISCLOSURE STATEMENT****S I R:**

1. In accordance with the duty of disclosure under 37 C.F.R. § 1.56 and in conformance with the procedures of 37 C.F.R. §§ 1.97 and 1.98 and M.P.E.P. § 609, attorneys for Applicants hereby bring the following references, which are listed on the attached modified PTO Form No. 1449 to the attention of the Examiner. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

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**CERTIFICATE OF TRANSMISSION**

I hereby certify that this correspondence is being facsimile transmitted to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, Group Art Unit 1753 at (703) 872-9306 on September 23, 2004.

  
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Esther Kim

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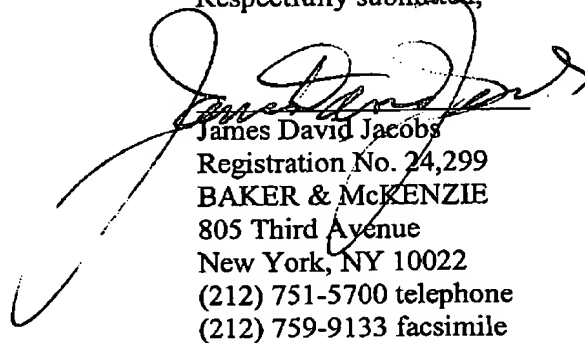
Docket No.: 22122878-4412

2. Applicants respectfully request that the following co-owned patents and co-pending applications be considered and made of record in the present application:  
US Patent Nos. 6,114,620 (cited on PTO-892 by the Examiner); 6,218,608 (cited on PTO-892 by the Examiner); 6,222,116 (cited on PTO-892 by the Examiner); 6,268,560 (cited on PTO-892 by the Examiner); 6,327,859 (cited on PTO-892 by the Examiner); 6,700,056 (cited on PTO-892 by the Examiner); 6,678,305; 6,649,823 (cited on PTO-892 by the Examiner); and  
US Patent Application Nos. 10/759,341; 09/631,463; 09/682,363 (US-2002/0017827, cited on form PTO-892 by the Examiner); 10/052,004 (US-2003/0166307, cited on form PTO-892 by the Examiner); 10/625,801; 10/185,086 (US-2003/0000570, cited on PTO-892 by the Examiner).  
The references cited in each of those patents and applications are listed on Form 1449 accompanying this information disclosure statement.
3. Copies of the references listed on the modified PTO form 1449 will follow under a separate cover by first class mail due to their volume.

Docket No.: 22122878-4412

4. No fee is deemed necessary with the filing of these documents. If a fee is deemed necessary, we authorize the Commissioner of Patents and Trademarks to charge Deposit Account No.: 02-0393.

Respectfully submitted,



James David Jacobs  
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BAKER & MCKENZIE  
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PTO/SB/08A (08-03)

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 57

**Complete if Known**

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
	1	US- 6114620A	09-2000	Zuppero et al.	
	2	US- 4753579	06-1988	Murphy	
	3	US- 5525041	06-1996	Deak	
	4	US- 5299422	04-1994	Nakagawa et al.	
	5	US- 5317876	05-1994	Nakagawa et al.	
	6	US- 4045359	08-1997	Fletcher et al.	
	7	US- 4407705	10-1983	Garscadden et al.	
	8	US- 5593509	01-1997	Zuppero et al.	
	9	US- 5641585	06-1997	Lessing et al.	
	10	US- 6114620	09-2000	Zuppero et al.	
	11	US- 6218608	04-1001	Zuppero et al.	
	12	US- 6222116	04-2001	Zuppero et al.	
	13	US- 6268560	07-2001	Zuppero et al.	
	14	US- 2001-0018923 A1	09-2001	Zuppero et al.	
	15	US- 6327859 B1	12-2001	Zuppero et al.	
	16	US- 6649823 B2	11-2003	Zuppero et al.	
	17	US- 6678305 B1	01-2004	Zuppero et al.	
	18	US- 6700056 B2	03-2004	Zuppero et al.	
	19	US- 20020017827 A1	02-2002	Zuppero et al.	

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear
		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)			

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This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet 2 of 57**Complete if Known**

Application Number	09/631,463
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First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

**U. S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
	20	US- 20030166307 A1	09-2003	Zuppero et al.	
	21	US- 20030000570 A1	01-2003	Zuppero et al.	
	23	US- 20020196825 A1	12-2002	Zuppero et al.	
	24	US- 6678305	01-2004	Zuppero et al.	
	25	US- 20020070632	06-2002	Zuppero et al.	
	26	US- 4651324	03-1987	Prein et al.	
	27	US- 5337329	08-1994	Foster, Jack	
	28	US- 4756000	07-1988	Macken, John A.	
	29	US- 5999547	12-1999	Schneider et al.	
	30	US- 5048042	09-1991	Moser et al.	
	31	US- 6268560	07-2001	Zueppero et al.	
	32	US- 5587827	12-1996	Hakimi et al.	
	33	US- 6114620	09-2000	Zuppero et al.	
	34	US- 4012301	03-1977	Rich et al.	
	35	US- 5470395	11-1995	Yater et al.	
	36	US-			
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		Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)				

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Substitute for form 1449/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(Use as many sheets as necessary)</i>		Application Number	09/631,463
		Filing Date	August 3, 2000
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1725
		Examiner Name	Kiley Stoner
		Attorney Docket Number	22122878-4412
Sheet 3	of 57		

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Examiner Signature	Date Considered
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<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant to place a check mark here if English language Translation is attached.

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Sheet 4 of 57

<b>INFORMATION DISCLOSURE CITATION IN AN APPLICATION</b>  <i>(Use several sheets if necessary)</i>	<b>Attorney Docket Number</b> 22122878-4412	<b>Application Number</b> 09/631,463
	<b>Applicants</b> Anthony C. Zuppero et al.	
	<b>Filing Date</b> August 3, 2000	<b>Group Art Unit</b> 1725

**U.S. PATENT DOCUMENTS**

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE

**FOREIGN PATENT DOCUMENTS**

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO

**OTHER DOCUMENTS** (Including Author, Title, Date, Pertinent Pages, etc.)

	"Electron-hole pair creation by reactions at metal surfaces", downloaded from <a href="http://www.aps.org/meet/CENT99/BAPS/abs?S6980001.html">www.aps.org/meet/CENT99/BAPS/abs?S6980001.html</a> American Physical Society Centennial Meeting Program, Atlanta, GA. 20-26 March 1999
	"Electron-Hole Pair Creation at Ag and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium", Physical Review Letters, Volume 82, Number 2. 11 January 1999
<b>EXAMINER:</b>	<b>DATE CONSIDERED:</b>
<b>EXAMINER:</b> Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.	

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**INFORMATION DISCLOSURE  
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Sheet 5 of 57

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First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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		Number - Kind Code <sup>3</sup> (if known)			
	1	US- 4,634,641	01-06-1987	Nozik	
	2	US- 5,488,231	01-30-1996	Kwon et al.	
	3	US- 5,757,833	05-26-1998	Arakawa et al.	
	4	US- 5,917,195	06-29-1999	Brown	
	5	US- 6,067,309	05-23-2000	Onomura et al.	
	6	US- 6,114,620	09-05-2000	Zuppero et al.	
	7	US- 6,218,608	04-17-2001	Zuppero et al.	
	8	US- 6,222,116	04-24-2001	Zuppero et al.	
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FOREIGN PATENT DOCUMENTS						
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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 6 of 57

**Complete if Known**

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

## U.S. PATENT DOCUMENTS

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## FOREIGN PATENT DOCUMENTS

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Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

Sheet 1 of 57

**OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS**

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>2</sup>
	2	HARRISON, P. et al., The Carrier Dynamics of Far-Infrared Intersubband Lasers and Tunable Emitters, Institute of Microwaves and Photonics, University of Leeds, U.K., pp. 1-64	
	3	WEBER, et al., to X2 Electron Transfer Times in Type-II GaAs/AlAs Superlattices Due to Emission of Confined and Interface Phonons, Superlattices and Microstructures, Vol. 23, No. 2 (1998).	
	4	FANN, W.S. et al., Electron Thermalization in Gold, Physical Review B, Brief Reports, Vol. 46, No. 20, (1992)	
	5	Ultrafast Surface Dynamics Group, Time-Resolved Two-Photon Photoemission (TR-2PPE), <a href="http://www.ilp.physik.uni-essen.de/aeschlimann/2y_photo.htm">http://www.ilp.physik.uni-essen.de/aeschlimann/2y_photo.htm</a>	
	6	LEWIS et al., Vibrational Dynamics of Molecular Overlayers on Metal Surfaces, Dept. of Chemistry, University of Pennsylvania, <a href="http://lorax.chem.upenn.edu/molisurf/cucotalk/html">http://lorax.chem.upenn.edu/molisurf/cucotalk/html</a> .	
	7	RETTNER et al., Dynamics of the Chemisorption of O <sub>2</sub> on Pt(111): Dissociation via Direct Population of a Molecularly Chemisorbed Precursor at High Incidence Kinetic Energy, The Journal of Chemical Physics, Vol. 94, Issue 2 (1991).	
	8	FRIEDMAN et al., SiGe/Si THz Laser Based on Transitions Between Inverted Mass Light-Hole and Heavy Hole Standards, Applied Physics Letters, Vol. 78, No. 4 (2001).	
	9	HARRISON et al., Population Inversion and Gain Estimates for a Semiconductor TASER	
	10	HARRISON et al., Theoretical Studies of Subband Carrier Lifetimes in an Optically Pumped Three-Level-Terahertz Laser, Superlattices and Microstructures, Vol. 23, No. 2 (1998)	
	11	HARRISON et al., Room Temperature Population Inversion in SiGe TASER Designs, IMP, School of Electronic and Electrical Engineering, The University of Leeds	
	12	SUN et al., Phonon-Pumped Terahertz Gain in n-Type GaAs/AlGaAs Superlattices, Applied Physics Letters, Vol. 7, No. 22 (2001)	

Examiner Signature	Date Considered
--------------------	-----------------

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Art Unit	1725
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Attorney Docket Number	22122878-4412

**OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS**

Examiner Initials <sup>1</sup>	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>2</sup>
	13	ALTUKHOV et al., Towards Si1-xGe Quantum-Well Resonant-State Terahertz Laser, Applied Physics Letters, Vol. 79, No. 24 (2001)	
	14	SUN et al., Intersubband Lasing Lifetimes of SiGe/Si and GaAs/AlGaAs Multiple Quantum Well Structures, Applied Physics Letters, Vol. 66, No. 25 (1995)	
	15	SUN et al., Phonon Pumped SiGe/Si Interminiband Terahertz Laser	
	16	SOREF et al., Terahertz Gain in a SiGe/Si Quantum Staircase Utilizing the Heavy-Hole Inverted Effective Mass, Applied Physics Letters, Vol. 79, No. 22 (2001)	
	17	AESCHLIMANN et al., Competing Nonradiative Channels for Hot Electron Induced Surface Photochemistry, Chemical Physics 202, 127-141 (1996)	
	18	AUERBACH, Daniel J., Hitting the Surface-Softly, Science, Vol. 294, pp. 2488-2489 (2001)	
	19	BADESCU et al., Energetics and Vibrational States for Hydrogen on Pt(111), Physical Review Letters, Vol. 88, No. 13 (2002)	
	20	BALANDIN et al., Effect of Phonon Confinement on the Thermoelectric Figure of Merit of Quantum Wells, Journal of Applied Physics, Vol. 84, No. 11 (1998)	
	21	BARTELS et al., Coherent Zone-Folded Longitudinal Acoustic Phonons in Semiconductor Superlattices: Excitation and Detection, Physical Review Letters, Vol. 82, No. 5 (1999)	
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	23	BEDURFTIG et al., Vibrational and Structural Properties of OH Adsorbed on Pt(111), Journal of Chemical Physics, Vol. 111, No. 24 (1999)	

Examiner  
SignatureDate  
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**INFORMATION DISCLOSURE  
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Sheet 9 of 57

**Complete if Known**

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

**OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>2</sup>
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**INFORMATION DISCLOSURE  
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Sheet 10 of 57**Complete if Known**

Application Number	09/631,483
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

Sheet 11 of 57

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Sheet 12 of 57

**Complete if Known**

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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	57	ENGSTROM et al., Comparing the Vibrational Properties of Low-Energy Modes of a Molecular and an Atomic Adsorbate: CO and O on Pt(111), Journal of Chemical Physics, Vol. 112, No. 4 (2000)	
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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (Use as many sheets as necessary)		Application Number	09/631,463
		Filing Date	August 3, 2000
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1725
		Examiner Name	Kiley Stoner
		Attorney Docket Number	22122878-4412
Sheet 13 of 57			

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	68	HARRISON et al., The Carrier Dynamics o Far-Infrared Intersubband Lasers and Tunable Emitters, <a href="http://www.ee.leeds.ac.uk/homes/ph/">www.ee.leeds.ac.uk/homes/ph/</a>	
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**INFORMATION DISCLOSURE  
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Sheet 14 of 57

**Complete if Known**

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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	79	KRAUSS et al., Coherent Acoustic Phonons in a Semiconductor Quantum Dot, Physical Review Letters, Vol. 79, No. 25 (1997)	
	80	LUGLI et al., Interaction of Electrons with Interface Phonons in GaAs/AlAs and GaAs/AlGaAs Heterostructures, Semicond. Sci. Technol. 7 (1992)	
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Sheet 15 of 57

**Complete if Known**

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
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	90	PLIHAL et al., Role of Intra-Adsorbate Coulomb Correlations in Energy Transfer at Metal Surfaces, Physical Review B, Vol. 58, No. 4 (1998)	
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Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
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	101	PONTIUS, et al., Size-Dependent Hot-Electron Dynamics in Small Pdn-Clusters, Journal of Chemical Physics, Vol. 115, No. 22 (2001)	
	102	SMIT et al., Enhanced Tunneling Across Nanometer-Scale Metal-Semiconductor Interfaces, Applied Physics Letters, Vol. 80, No. 14 (2002)	
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	110	TRIPA et al., Surface-Aligned Photochemistry: Aliming Reactive Oxygen Atoms Along a Single Crystal Surface, Journal of Chemical Physics, Vol. 112, No. 5 (2000)	
	111	TRIPA et al., Surface-Aligned Reaction of Photogenerated Oxygen Atoms with Carbon Monoxide Targets, Nature, Vol. 398 (1999)	

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Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

Sheet 17 of 57

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	112	TRIPA et al., Kinetics Measurements of CO Photo-Oxidation on Pt(111), J. Chem. Phys. 105 (4) (1996)	
	113	TAYLOR et al., Strong Electron-LO Phonon Scattering and Hot Carrier Relaxation in GaN, Abstract No. ha249KW3	
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	117	STROMQUIST et al., The Dynamics of H Absorption in and Adsorption on Cu(111), Surface Science 397, pp. 382-394 (1998)	
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	122	YEO et al., Calorimetric HEats for CO and Oxygen Adsorption and for the Catalytic CO Oxidation Reaction on Pt(111), J. Chem. Phys. 106 (1) (1997)	

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Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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	133	HARRISON et al., The Carrier Dynamics of Terhertz Intersubband Lasers, Some Publishing Company (1999)	

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Application Number	09/631,463
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First Named Inventor	Anthony C. Zuppero
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Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

Sheet 19 of 57

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Sheet 20 of 57

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Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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**Complete If Known**

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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Sheet 22

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Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
An Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	21222878-4412

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	7	AUERBACH, Daniel J.; "Hitting the Surface—Softly"; Science, 294, (2001), pp. 2488-2489	
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Sheet 25

of 57

**Complete if Known**

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

**OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS**

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	25	GEE, Adam T., et al.; "The dynamics of O2 adsorption on Pt(533)..."; J. Chem. Phys.(2000) 113, pp. 10333-10343	
	26	GERGEN, Brian, et al.; "Chemically Induced Electronic Excitations at Metal Surfaces"; Science, 294, (2001) pp. 2521-2523	
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	31	HENRY, Claude R.; "Catalytic activity ... nanometer-sized metal clusters"; Applied Surf. Sci., 164, (2000) pp 252-259	
	32	HESS, S., et al.; "Hot Carrier Relaxation ... Phonon Scattering in GaN"; <a href="http://www.physics.ox.ac.uk/~rtaylor/images/hot%20carrier%20poster.pdf">http://www.physics.ox.ac.uk/~rtaylor/images/hot%20carrier%20poster.pdf</a>	
	33	HO, Wilson; <a href="http://www.laspp.cornell.edu/laspp_data/wilsonbo.html">http://www.laspp.cornell.edu/laspp_data/wilsonbo.html</a>	

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Sheet 26 of 57

## **Complete if Known**

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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	34	HOHLFELD, J, et al.; "Electron and lattice dynamics ... optical excitation of metals"; Chemical Physics, 251 (2000) pp 237-258	
	35	HONKALA, Karoliina, et al.; "Ab initio study of O2 precursor states on the Pd(111)..."; J. Chem. Phys. (2001) 115, pp. 2297-2302	
	36	HOU, H.; Y., et al.; "Chemical Interactions of Super-Excited Molecules on Metal Surfaces"; <a href="http://www2.chem.ucsb.edu/~wodtke/papers/dan1.pdf">http://www2.chem.ucsb.edu/~wodtke/papers/dan1.pdf</a>	
	37	HOU, H., et al.; "Direct multi-quantum relaxation of highly vibrationally excited NO ..."; J. Chem. Phys., 110, (1999) pp 10660 - 10663	
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	41	IBH; "Red picosecond laser sources"; <a href="http://www.ibh.co.uk/products/light_sources/nanoled/heads/red_laser_heads.htm">http://www.ibh.co.uk/products/light_sources/nanoled/heads/red_laser_heads.htm</a>	
	42	IFTIMIA, Ileana, et al.; "Theory ... scattering of molecules from surface"; Phys. Rev. B (2002) 65, Article 125401	

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Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Klley Stoner
Attorney Docket Number	22122878-4412

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	43	ISHIKAWA, Yasuyuki, et al.; "Energetics of H <sub>2</sub> O dissociation and COads+OHads reaction .. Pt.."; Surf. Sci. preprints SUSC 12830, 27 April 2002	
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	47	KAWAKAMI, R. K., et al.; "Quantum-well states in copper thin films"; Nature, 398, (1999) pp 132 - 134	
	48	KOMEDA, T., et al.; "Lateral Hopping of Molecules Induced by Excitation of Internal Vibration..."; Science, 295, (2002) pp 2055-2058	
	49	LEWIS, Steven P., et al.; "Continuum Elastic Theory of Adsorbate Vibrational Relaxation"; J. Chem. Phys. 108, 1157 (1998)	
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Sheet 28 of 57

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Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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	52	MITSUI, T., et al.; "Coadsorption and interactions of O and H on Pd(111)"; Surf. Sci., Article 12767, (2002)	
	53	MOULA, Md. Golam, et al.; "Velocity distribution of desorbing CO2 in CO oxidation on Pd(110)..."; Applied Surf. Sci., 169-170, pp 268-272 (2001)	
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	55	NIENHAUS, H, et al.; "Direct detection of electron-hole pairs generated by chemical reactions on metal surfaces"; Surf. Sci. 445 (2000) pp 335- 342	
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	60	NOLAN P. D., et al.; "Direct verification of... precursor to oxygen dissociation on Pd(111)"; Surf. Sci. v. 419(#1) pp. L107-L113, (1998)	

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	Application Number	09/831,463
	Filing Date	August 3, 2000
	First Named Inventor	Anthony C. Zuppero
	Art Unit	1725
	Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412	

Sheet 29 of 57

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	61	NOLAN, P. D., et al.; "Molecularly chemisorbed intermediates to oxygen adsorption on Pt ..."; J. Chem. Phys. 111, (1999), pp 3696 - 3704	
	62	NOLAN, P. D., et al.; "Translational ... Precursors to Oxygen Adsorption on Pt(111)"; Phys. Rev. Lett., 81, (1998) pp 3179 - 3182	
	63	OGAWA, S., et al.; "Optical ... and Femtosecond Dynamics in Ag/Fe(100) Quantum Wells"; Phys. Rev. Lett. 88, 116801 (2002)	
	64	PAGGEL, J. J., et al.; "Quantum-Well States as Fabry-Pérot Modes in a ..."; Science, 283, (1999), pp 1709 - 1711	
	65	PAGGEL, J. J., et al.; "Quasiparticle Lifetime ... Ag/Fe(100) Quantum Wells"; Phys. Rev. Lett. (1998) 81, pp. 5632-5635	
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	68	RINNEMO, Mats; "Catalytic Ignition and Kinetic Phase Transitions"; 1996; <a href="http://www2.lib.chalmers.se/cth/diss/doc/9596/RinnemoMats.html">http://www2.lib.chalmers.se/cth/diss/doc/9596/RinnemoMats.html</a>	
	69	ROBERTSON, A. J. B.; "Catalysis of Gas Reactions by Metals"; Logos Press Limited; 1970; LC # 70-80936; pp. 1-5, 10, 41; Great Britain, Adlard & son Ltd	

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Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

Sheet 30 of 57

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	71	SHENG, H., et al.; "Schottky diode with Ag on (110) epitaxial ZnO film"; Appl. Phys. Let. (2002) 80, pp. 2132-2134	
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	73	SNOW, E. S., et al.; "Ultrathin PtSi layers patterned by scanned probe lithography"; Appl. Phys. Let. (2001) 79, pp. 1109-1111	
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	78	TAYLOR, R.A., et al.; "Strong Electron-LO Phonon Scattering and Hot Carrier Relaxation in GaN"; <a href="http://www.physics.ox.ac.uk/rtaylor/images/ha249kw3.pdf">http://www.physics.ox.ac.uk/rtaylor/images/ha249kw3.pdf</a>	

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		Filing Date	August 3, 2000
		First Named Inventor	Anthony C. Zuppero
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	79	TEODORESCU, C.M., et al.; "Structure of Fe layers grown on InAs ..."; Appl. Surf. Sci., 166, (2000) pp 137-142	
	80	TIUSAN, C., et al.; "Quantum coherent transport versus diode-like effect in ..."; Appl. Phys. Lett. 79, (2001) pp 4231-4233	
	81	TRIPA, C. Emil, et al.; "Surface-aligned photochemistry: Aiming reactive oxygen atoms..."; J. Chem. Phys., (2000) 112 pp. 2463-2469	
	82	TRIPA, C. Emil, et al.; "Surface-aligned reaction of photogenerated oxygen atoms with ..."; Nature 398, pp 591 - 593 (1999)	
	83	TRIPA, C. Emil; "Special Adsorption and Reaction Effects at Step Defect Sites on Platinum ..."; <a href="http://www.chem.pitt.edu/thesis.html#tripa">http://www.chem.pitt.edu/thesis.html#tripa</a> (abstract only)	
	84	VOLKENING, S., et al.; "CO oxidation on Pt(111)—Scanning tunneling microscopy experiments ..."; J. Chem. Phys. (2001) 114, pp. 6382-6395	
	85	WATSON, D.T.P., et al.; "Isothermal and temperature-programmed oxidation of CH over Pt..."; Surf. Sci. preprint, year 2001	
	86	WATSON, D.T.P., et al.; "Surface products of the dissociative adsorption of methane on Pt ..."; Surf. Sci. preprint, c. October 2001	

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		Filing Date	August 3, 2000
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1725
		Examiner Name	Kiley Stoner
		Attorney Docket Number	22122878-4412
Sheet	32	of	57

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	87	WILKE, Steffen, et al.; "Theoretical investigation of water formation on Rh and Pt Surfaces"; J. Chem. Phys., 112, (2000) PP 9986 - 9995	
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	93	ZHUKOV, V. P., et al.; "Lifetimes of quasiparticle excitations in 4d transition metals ..."; Phys. Rev. B (2002) 65, Article 115116	

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (Use as many sheets as necessary)		Application Number	09/631,463
		Filing Date	August 3, 2000
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1725
		Examiner Name	Kiley Stoner
Sheet 33 of 57	Attorney Docket Number	22122878-4412	

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	1	DANIEL J. AUERBACH, Hitting the Surface Softly, www.sciencemag.org, Vol 294 Science, December 21, 2001, pp. 2488-2489.	
	2	M.D CUMMINGS AND A.Y ELEZZABI, Ultrafast impulsive excitation of coherent longitudinal acoustic phonon oscillations in highly photoexcited InSb, 2001 American Institute of Physics, Volume 79, Number 6, August 6, 2001.	
	3	J.W. GADZUK, Resonance-Assisted Hot Electron Femtochemistry at Surfaces, National Institute of Standards and Technology, Gaithersburg, Maryland 20899, Physical Review Letters, Volume 76, Number 22, May 27, 1996.	
	4	BRIAN GERGEN, HERMAN NIENHAUS, W., HENRY WEINBERG, ERIC W. McFARLAND, Chemically Induced Electronic Excitations at Metal Surfaces, www.sciencemag.org, Vol 294, December 21, 2001, Pgs 2521-2523.	
	5	H.HOU, Y.HUANG, S.J. GUILDING, C.T RETTNER, D.J. AUERBACH, A.M. WOODTKE, Enhanced Reactivity of Highly Vibrationally Excited Molecules on Metal Surfaces, www.sciencemag.org, Vol 284, June 4, 1999, pgs. 1647-1650	
	6	Y.HUANG, C.T RETTNER, D.J. AUERBACH, A.M. WOODTKE, Vibrational Promotion of Electron Transfer, sciencemag.org, Vol 290, October 6, 2000, pgs.111-114.	
	7	STEVEN P. LEWIS, ANDREW M. RAPPE, Controlling adsorbate vibrational lifetimes using superlattices, 2001 The American Physical Society, Physical Review B, Volume 63, 085402.	
	8	HENRY WEINBERG, ERIC W. McFARLAND, A. MAJUNDAR, B. GERGEN, HERMAN NIENHAUS, W.H.S BERGH, Electron-Hole Pair Creation at Al and Cu Surfaces by Adsorption of Atomic Hydrogen and Deuterium, 1999 The American Physical Society, Physical Review Letters, Volume 82,	
	9	HENRY WEINBERG, ERIC W. McFARLAND, A. MAJUNDAR, B. GERGEN, HERMAN NIENHAUS, W.H.S BERGH, Direct detection of electron-hole pairs generated by chemical reactions on metal surfaces, 2000 Elsevier Science B.V., Surface Science, pgs. 335-342.	
	10	XIAOFENG, FAN, GEHONG, CHRIS LABOUNTY, AND BOWERS, JOHN E., CROKE, EDWARD, AHN, CHANNING C., HUXTABLE, SCOTT, MAJUMDAR, ARUN, SHAKOURI, ALI, SiGe/Si superlattice microcoolers; Applied Physics Letters, Volume 78, Number 11, 12 March 2001, Pg: 1580-1582.	
	11	FRIEDMAN, L., SUN G., SOREF, R.A.; SiGe/Si THz laser based on transitions between inverted mass light-hole and heavy-hole subbands; Applied Physics Letters, Volume 78, Number 4, 22 January 2001; Pg: 401-403.	

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Sheet 34 of 57**Complete if Known**

Application Number	09/631,463
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Attorney Docket Number	22122878-4412

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	12	HARRISON, P., SOREF, R.A.; Population-inversion and gain estimates for semiconductor TASER.	
	13	HARRISON, P., SOREF, R.A.; Room temperature population inversion in SiGe TASER design.	
	14	HOHLFELD, J., WELLERSHOFF, S.-S, J., GUDDE, U., CONRAD, V., JAHNKE, E., MATTIAS; Electron and lattice dynamics following optical excitation of metals; Chemical Physics 251(2000). Pg: 237-258.	
	15	HOU, H., HUANG, Y., GOULDING, S.J., RETTER, C.T., AUERBACH, D.J., WODRKE, A.M.; Direct multiquantum relaxation of highly vibrationally excited NO in collisions with O/Cu(111); Journal of Chemical Physics; Volume 110, Number 22, 22 December 1999; Pgs: 10957-10963.	
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	17	KAWAKAMI, R.K., ROTENBERG, E., CHOI, HYUK J., ESCORCIA-APARICIO, ERNESTO J., BOWEN, M.O., WOLFE, J.H., ARENHOLZ, E., ZHANG, Z.D., SMITH, N.V., QIU, Z.Q., Quantum-well states in copper thin films; Letters to nature; Volume 398; 11 March 1999; www.nature.com.	
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	Art Unit	1725
	Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412	

Sheet 35 of 57

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	20	H. NIEHAUS et al., "Direct detection of electron-hole pairs generated by chemical reaction on metal surfaces", Surface Science 445 (2000), Pages 3350342.	
	21	H. NIEHAUS et al., "Selective H atom sensors using ultrathin Ag/Si Schottky diodes", Applied Physics Letters, Volume 74, Number 26, 28 June 1999, Pages 4046-4048.	
	22	J.J. PAGGEL et al., "Quantum-Well States as a Fabry-Perot Modes in a Thin-Film Electron Interferometer", www.Sciencemag.org Science Vol 284 12 March 1999, Pages 1709-1711.	
	23	J.J. PAGGEL et al., "Quasiparticle Lifetime in Macroscopically Uniform Ag/Fe(100) Quantum Wells", Physical Review Letters, Volume 81, Number 25, 21 December 1998, Pages 5632-5635.	
	24	J.J. PAGGEL et al., "Quantum well photoemission from atomically uniform Ag films: determination of electronic band structure and quasi particle lifetime in Ag(100), Applied Surface Science 162-163(2000), Pages 78-85.	
	25	N.PONTIUS et al., "Size-dependent hot-electron dynamics in small Pd <sub>n</sub> -cluster", Journal of Chemical Physics, Volume 115, Number 22, 8 December 2001, Pages 10479-10483.	
	26	R.A. SOREL et al., "Terahertz gain in a SiGe/Si quantum staircase utilizing the heavy-hole inverted effective mass, Applied Physics Letters, Volume 79, Number 22, 26 November 2001, Pages 3639-3641.	

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Sheet 36 of 57**Complete If Known**

Application Number	09/831,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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	27	G. SUN et al., "Phonon-pumped terahertz gain in n-type GaAs/AlGaAs Superlattices, Applied Physics Letters, Volume 78, Number 22, Pages 3520-3522.	
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Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

Sheet 37

of 57

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	36	P. ARMOUR et al., "Hot-electron transmission through metal-metal interfaces: a study of Au/Fe/Au trilayers in GaAs substrates", Applied Surface Science 123/124 (1998), Pages 412-417.	
	37	C.D. BEZANT et al., "Intersubband relaxation lifetimes in p-GaAs/AlGaAs quantum wells below the LO-phonon energy measured in a free electron laser experiment", Vacuum Solutions Online, Semicond. Sci. Technol. 14 No. 8 (August 1999) L25-L28, PII: S0268-1242(99)03669-X.	
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Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
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	A	US-4045359	08-1977	Fletcher et al.	
	B	US-4407705	10-1983	Garscadden et al.	
	C	US-5932885	08-1999	DeBellis et al.	
	D	US-6114620	09-2000	Zuppero et al.	
	E	US-6218608-B1	04-2001	Zuppero et al.	
	F	US-6222116-B1	04-2001	Zuppero et al.	
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	1	REE, J. et al., "Dynamics of Gas-Surface Interactions: Reaction of Atomic Oxygen with Chemisorbed Hydrogen on TUNGSTEN," Journal of Physical Chemistry, Vol. 101 (#25), pp. 4523 - 4534, June 19, 1997.	
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	6	KIM, M. S. et al., "Reaction of Gas-Phase Atomic Hydrogen with Chemisorbed Hydrogen Atoms on an Iron Surface," Bull. Korean Chem. Soc., Vol. 18, No. 9, pp. 985 - 994, May 22, 1997.	
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	9	DAVIS, J. E. et al., "Kinetics and dynamics of the dissociative chemisorption of oxygen on Ir(111)," Journal of Chem. Phys., Vol. 107(3), pp. 943 - 952, July 15, 1997.	
	10	TRIPA, C. Emil et al., "Surface-aligned reaction of photo-generated oxygen atoms with carbon monoxide targets," Nature, Vol. 398, pp. 591 - 593, April 15, 1999, www.nature.com.	
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	12	TRIPA, C. Emil et al., "Kinetics measurements of CO photo-oxidation on Pt(111)," Journal of Chemical Physics, Vol. 105, Issue 4, pp. 1691 - 1696, July 22, 1996.	

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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 42

of 57

**Complete if Known**

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

## U.S. PATENT DOCUMENTS

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## FOREIGN PATENT DOCUMENTS

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Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (Use as many sheets as necessary)		Application Number	09/631,463
		Filing Date	August 3, 2000
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1726
		Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412		
Sheet 50 of 57			

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	1.	FRESE, et al., "Analysis of Current/Voltage Curves at n-Si/SiO <sub>2</sub> /Pt Electrodes", J. Electrochem. Soc., December 1994, pp. 3375-3382, Vol. 141, No. 12, The Electrochemical Society, Inc.	
	2.	FRESE, et al., "Methanol Oxidation at p-Si/Pt Electrodes, Evidence for Hot Hole Reactivity", J. Phys. Chem., 1995, pp. 6074-6083, Vol. 99, American Chemical Society.	
	3.	GADZUK, "Multiple Electron Processes in Hot-Electron Femtochemistry at Surfaces", <a href="http://www.cstl.nist.gov/div837/837.03/highlite/gadzuk1999.htm">http://www.cstl.nist.gov/div837/837.03/highlite/gadzuk1999.htm</a> .	
	4.	FRESE, et al., "Hot Electron Reduction at Etched n-Si/Pt Thin Film Electrodes", J. Electrochem. Soc., September 1994, pp.2402-2409, Vol. 103, The Electrochemical Society Inc.	
	5.	GAILLARD, et al., "Hot Electron Generation in Aqueous Solution at Oxide-Covered Tantalum Electrodes, Reduction of Methylpyridinium and Electrogenenerated Chemiluminescence of Ru(bpy) <sub>3</sub> <sup>2+</sup> ", J. Phys. Chem., 1999, pp.667-674, Vol. 103, American Chemical Society.	
	6.	SUNG, et al., "Demonstration of Electrochemical Generation of Solution-Phase Hot Electrons at Oxide-Covered Tantalum Electrodes by Direct Electrogenenerated Chemiluminescence", J. Phys. Chem., 1998, pp. 9797-9805, Vol. 102, American Chemical Society.	
	7.	ZHDANOV, et al., "Substrate-mediated photoinduced chemical reactions on ultrathin metal films", Surface Science, 1999, pp. L599-L603, Vol. 432, Elsevier Science B.V.	

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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 51

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**Complete If Known**

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Klley Stoner
Attorney Docket Number	22122878-4412

## U.S. PATENT DOCUMENTS

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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 52 of 57

## Complete If Known

Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Kiley Stoner
Attorney Docket Number	22122878-4412

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	5	ACHERMANN, M. et al., "Carrier dynamics around nano-scale Schottky contacts: a femtosecond near-field study", Applied Surface Science 7659 (2002) 1-4.	
	6	AESCHLIMANN, M. et al., "Competing nonradiative channels for hot electron induced surface photochemistry", Chemical Physics, April 15, 1996, pp. 127-141, Vol: 205, Issue: 1-2.	
	7	AESCHLIMANN, M. et al., "Ultrafast electron dynamics in metals", The Ultrafast Surface Science Group, <a href="http://www.ilp.physik.uni-essen.de/aeschlimann/2y_photo.htm">http://www.ilp.physik.uni-essen.de/aeschlimann/2y_photo.htm</a>	
	8	AUERBACH, D. et al., "Reagent Vibrational Excitation: A Key to Understanding Chemical Dynamics at Surfaces?", abstract only.	
	9	BALANDIN, A. et al., "Significant decrease of the lattice thermal conductivity due to phonon confinement in a free-standing semiconductor quantum well", Physical Review B, July 15, 1998, Vol. 58, Issue 3, pp. 1545-1549.	
	10	BALANDIN, A. et al., "Effect of phonon confinement on the thermoelectric figure of merit of quantum wells", Journal of Applied Physics, December 1, 1998, Vol. 84, Issue 11, pp. 6149-6153	
	11	BONN, M. et al., "Phonon- Versus Electron-Mediated Desorption and Oxidation of CO on Ru(0001)", Science, Vol. 285, Number 5430, Issue of 13 Aug 1999, pp. 1042 - 1045	
	12	CHANG, Y. et al., "Coherent phonon spectroscopy of GaAs surfaces using time-resolved second-harmonic generation", Chemical Physics, 251/1-3, pages 283-308, (2000)	
	13	CHEN, -C. et al., "Hot electron reduction at n-Si/Au thin film electrodes", Journal-of-the-Electrochemical-Society, Vol. 139, November 1992, pages 3243-3249.	
	14	CHOI, C.K. et al., "Ultrafast carrier dynamics in a highly excited GaN epilayer", Physical Review B, Vol. 63, 115315, 15 March 2001, 6 pages.	

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		Filing Date	August 3, 2000
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1725
		Examiner Name	Kiley Stoner
		Attorney Docket Number	22122878-4412
Sheet 53 of 57			

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	15	DEBERNARDI, A. et al., "Anharmonic Phonon Lifetimes in Semiconductors from Density-Functional Perturbation Theory", Physical Review Letters, VOL. 75, NUMBER 9, 28 AUGUST 1995, pp 1819 - 1822.	
	16	DELFRATTI, N. et al., "Temperature-dependent electron-lattice thermalization in GaAs", Physical Review B, 15 FEBRUARY 1999-I, Vol. 59, Number 7, pp 4576 - 4579.	
	17	DENZLER, D.N., et al., "Surface femtochemistry: Ultrafast reaction dynamics driven by hot electron mediated reaction pathways", Femtochemistry and Femtobiology: Ultrafast Dynamics in Molecular Science. (World Scientific, 2002).	
	18	DIESING, D. et al., "Surface reactions with hot electrons and hot holes in metals", Surface Science, 331-333, 1995, pages 289 - 293.	
	19	DRISKILL-SMITH, A. A. G. et al., "The "nanotriode." A nanoscale field-emission tube", Applied Physics Letters, November 1, 1999, Vol. 75, Issue 18, pp. 2845-2847.	
	20	FAN, C. Y. et al., "The oxidation of CO on RuO <sub>2</sub> - TiO <sub>2</sub> - at room temperature", Journal of Chemical Physics, Vol. 114, Number 22, 8 June 2001, P 10058.	
	21	FRESE, K.W., Jr. et al., "Hot electron reduction at etched n-Si/Pt thin film electrodes", Journal-of-the-Electrochemical-Society, Vol. 141, September 1994, pages 2402-9.	
	22	FUNK, S. et al., "Desorption of CO from Ru - 001 - induced by near-infrared femtosecond laser pulses", Journal of Chemical Physics, Vol. 112, Number 22, 8 June 2000, pages 9888 - 9897.	
	23	GADZUK, J. W., "Resonance-assisted hot electron femtochemistry at surfaces", Physical Review Letters, May 27, 1996, Vol. 76, Issue 22, pages 4234-4237.	
	24	GADZUK, J. W., "Multiple Electron Processes in Hot-Electron Femtochemistry at Surfaces", <a href="http://www.cstl.nist.gov/div837/837.03/highlite/gadzuk1999.htm">http://www.cstl.nist.gov/div837/837.03/highlite/gadzuk1999.htm</a>	
	25	GADZUK, J. W., "Surface Femtochemistry with Fast Lasers and Slow Nanostructures", <a href="http://www.cstl.nist.gov/div837/837.03/highlite/previous/dietmim.htm">http://www.cstl.nist.gov/div837/837.03/highlite/previous/dietmim.htm</a>	

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		Filing Date	August 3, 2000
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1726
		Examiner Name	Kiley Stoner
Sheet 54 of 57	Attorney Docket Number	22122878-4412	

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	26	GAILLARD, F. et al., "Hot electron generation in aqueous solution at oxide-covered tantalum electrodes. Reduction of methylpyridinium and electrogenerated chemiluminescence of Ru(bpy)32+", <i>Journal of Physical Chemistry B</i> , Vol. 103, No. 4, January 28, 1999, pages 667-74.	
	27	GAO, S., "Quantum kinetic theory of vibrational heating and bond breaking by hot electrons", <i>Physical Review B</i> , Vol. 55, No. 3, 15 January 1997-I, pages 1876-1886.	
	28	GERGEN, B. et al., "Chemically Induced Electronic Excitations at Metal Surfaces", <i>Science</i> , Vol. 294, Number 5551, Issue of 21 December 2001, pages 2521-2523.	
	29	GUO, J. et al., "The desorption yield dependence on wavelength of femtosecond laser from CO/Cu(111)", Annual Meeting of the American Physical Society, March 1999, Atlanta, GA;	
		Session BC18 - Surfaces (General), ORAL session, March 21; Room 258W, GWCC [BC18.06]	
	30	HESS, S. et al., "Hot Carrier Relaxation by Extreme Electron - LO Phonon Scattering in GaN", <a href="http://www.physics.ox.ac.uk/staylor/images/hot%20carrier%20poster.pdf">http://www.physics.ox.ac.uk/staylor/images/hot%20carrier%20poster.pdf</a>	
	31	HOFER, U., "Self-Trapping of Electrons at Surfaces", <i>Science</i> , Vol. 279, Number 5348, Issue of 9 January 1998, pages 190 - 191.	
	32	KATZ, G. et al., "A theoretical study of hole induced desorption", <i>Journal of Chemical Physics</i> , October 22, 1999, Vol. 111, Issue 16, pages 7593-7598.	
	33	LEE, B. C. et al., "Transmission of longitudinal optical phonons through a barrier in uniaxial crystals", <i>Physical Review B</i> , Vol. 65, 153315, 15 April 2002.	
	34	NANOLITE, "NANOLITE Sparkflashlamp", <a href="http://www.hsps.com/products/nanolaen.htm">http://www.hsps.com/products/nanolaen.htm</a>	
	35	NIENHAUS, H., "Electronic excitations by chemical reactions on metal surfaces", <i>Surface Science Reports</i> , 45, (2002), pages 1 - 78.	

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Substitute for form 1449/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(Use as many sheets as necessary)</i>		Application Number	09/631,463
		Filing Date	August 3, 2000
		First Named Inventor	Anthony C. Zuppero
		Art Unit	1725
		Examiner Name	Kiley Stoner
Sheet 55 of 57	Attorney Docket Number	22122878-4412	

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>2</sup>
	36	PLIHAL, M. et al., "Role of intra-adsorbate Coulomb correlations in energy transfer at metal surfaces", Physical Review B, July 15, 1998, Vol. 58, Issue 4, pages 2191-2206.	
	37	PONTIUS, N. et al., "Size-dependent hot-electron dynamics in small Pd-clusters", Journal of Chemical Physics, December 8, 2001, Vol. 115, Issue 22, pages 10479-10483.	
	38	PRYBYLA, J. A. et al., "Femtosecond time-resolved surface reaction: Desorption of CO from Cu(111) in < 325 fsec", Physical Review Letters, January 27, 1992, Vol. 68, Issue 4, pp. 503-506.	
	39	RINNEMO, M., "Catalytic Ignition and Kinetic Phase Transitions", <a href="http://www2.lib.chalmers.se/cth/diss/doc/9596/RinnemoMats.html">http://www2.lib.chalmers.se/cth/diss/doc/9596/RinnemoMats.html</a>	
	40	SAALFRANK, P. et al., "Quantum dynamics of bond breaking in a dissipative environment: Indirect and direct photodesorption of neutrals from metals", J. Chem. Phys. 105 (6), 8 August 1996, pages 2441 - 2454.	
	41	SUNG, Y.-E., et al., "Enhancement of electrochemical hot electron injection into electrolyte solutions at oxide-covered tantalum electrodes by thin platinum films", Journal of Physical Chemistry B., Vol. 102, No. 49, December 3, 1998, pages 9806-11.	
	42	WHITE, J. M., "Using photons and electrons to drive surface chemical reactions", Journal of Molecular Catalysis A: Chemical 131, 1998, pages 71-90.	
	43	ZHDANOV, V.P. et al., "Substrate-mediated photoinduced chemical reactions on ultrathin metal films", Surface Science, Vol. 432 (#3), pages L599-L603, Jul 20, 1999.	
	44	ZHU, X.-Y., "Surface photochemistry: from hot reactions to hot materials", Surface Science, Vol. 390, (1997), pages 224-236.	

Examiner Signature	Date Considered
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Sheet	57	of	57
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Application Number	09/631,463
Filing Date	August 3, 2000
First Named Inventor	Anthony C. Zuppero
Art Unit	1725
Examiner Name	Klley Stoner
Attorney Docket Number	22122878-4412

**U.S. PATENT DOCUMENTS**

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- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

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